United States Department of the Interior

FISH AND WILDLIFE SERVICE
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October 13, 2017

Mr. John F. Sullivan, III, P.E.
Division Administrator
Federal Highway Administration
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601

Dear Mr. Sullivan:

Subject: Proposed Replacement of Bridge No. 139 on County Home Road (SR 1609) over Glade Creek, Alexander County, North Carolina, TIP B-5391, Federal Aid No. BRZ-1609 (2), WBS Element No. 46106.1.1

This document transmits the U.S. Fish and Wildlife Service's (Service) Biological Opinion (Opinion) based on our review of the proposed Bridge No. 139 Replacement in Alexander County, North Carolina, and its effects on the federally threatened dwarf-flowered heartleaf (*Hexastylis naniflora*), and in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

This Opinion is based on information provided in a Biological Assessment (BA) received by the Service on September 5, 2017, and other sources of information. This document repeats much of the information provided in the BA, altered as needed to match style and preserve consistency. A complete administrative record of this consultation is on file at this office.

In the BA, the North Carolina Department of Transportation (NCDOT), in association with the Federal Highway Administration (FHWA), determined that the federally threatened bog turtle (*Glyptemys muhlenbergii*) would not be affected by the proposed bridge replacement project. The bog turtle is threatened due to similarity of appearance in North Carolina; therefore, section 7 does not apply. The FHWA and NCDOT have determined that the proposed action is consistent with the final 4(d) rule for the northern long-eared bat (*Myotis septentrionalis*), codified at 50 CFR 17.40(o) and effective February 16, 2016. Additionally, the NCDOT has committed to the following conservation measures for the northern long-eared bat. There will

be: (1) no alterations of a known hibernaculum's entrance or interior environment if it impairs an essential behavioral pattern, including sheltering northern long-eared bats (January 1 through December 31); (2) no tree removal within a 0.25-mile radius of a known hibernacula (January 1 through December 31); and (3) no cutting or destroying any known occupied maternity roost tree or any other trees within a 150-foot radius of the known occupied maternity tree during the period of June 1 through and including July 31.

In view of the information in the BA, we concur with your determination that the bridge replacement project meets exempt criteria under the 4(d) rule for the northern long-eared bat. We believe the requirements under section 7 of the Act are fulfilled for the northern long-eared bat. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals effects of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

CONSULTATION HISTORY

May 22, 2013 - A Natural Resources Technical Report for the B-5391 bridge replacement project was completed by the NCDOT with "Unresolved" rendered as a biological conclusion for the dwarf-flowered heartleaf (DFHL).

August 27, 2014 - Tim Bassette (NCDOT) initiated informal consultation with the Service by email to Marella Buncick (Service). The NCDOT provided the Service with the project history and the results of a May 21, 2014, visit to the site to measure floral features, including project mapping and photographs.

August 28, 2014 - Marella Buncick (Service) forwarded the NCDOT's correspondence to Jason Mays (Service).

September 3, 2014 - Jason Mays (Service) contacted Tim Bassette of the NCDOT by email about the number of DFHL plants anticipated to be affected by the project. Tim Bassette replied, indicating that planning was in preliminary stages and the number of individuals or acreage of habitat potentially affected was not yet known. He also provided a description of the two alternatives generated for the project and the relative impacts of each.

September 4, 2014 - Jason Mays (Service) assigned the B-5391 bridge replacement project as the Service's file number 14-357 and noted that the project is also geo-referenced. Jason Mays inquired about the availability of right-of-way (ROW) onto which to move plants. A telephone conversation was held, during which the Service concurred with the NCDOT's identification of the DFHL found at the project.

March 31, 2016 - The final Programmatic Categorical Exclusion was signed by the NCDOT.

May 10, 2016 - Laura Robinson of the North Carolina Natural Heritage Program (NCNHP) confirmed via email to Tim Bassette (NCDOT) that data for this project was entered and assigned element occurrence (EO) No. 308, with a rank of C (fair).

May 5, 2017 - Tim Bassette (NCDOT) provided several emails to Andrew Henderson (Service) in response to a voicemail left by the Service. In this series of emails, the NCDOT provided the Service with information regarding DFHL Sites 8A and 8B of EO No. 192, adjacent to the Shelby Bypass project (R-2707).

May 11, 2017 - A telephone conversation took place between Tim Bassette (NCDOT) and Andrew Henderson (Service). Andrew confirmed that he was the current Service contact for this project for the section 7 consultation process and asked that the NCDOT evaluate moving DFHL plants to existing or proposed ROW.

June 1, 2017 - A telephone conversation took place between Tim Bassette (NCDOT) and Andrew Henderson (Service). The NCDOT and Service discussed potential minimization efforts and additional on-site avoidance for the B-5391 project. The Service expressed interest in additional on-site conservation opportunities for the project, such as outreach and education about the DFHL for adjacent landowners, and about all the NCDOT's conservation efforts for the species to date. The NCDOT informed the Service it has acquired and monitored Sites 8A and 8B of DFHL EO No. 192, adjacent to the Shelby Bypass project (R-2707), and the sites contain about 175 individual DFHL plants, which were unknown prior to the NCDOT's land acquisition. The possible preservation of these sites in perpetuity has only recently been attainable.

June 13, 2017 - Tim Bassette (NCDOT) provided Andrew Henderson (Service) with several emails containing photographs and descriptions of several locations at the proposed B-5391 project within existing NCDOT ROW that could serve as potential habitat to support transplanted DFHL individuals.

June 15, 2017 - A telephone conversation took place between Tim Bassette (NCDOT) and Andrew Henderson (Service). The Service and NCDOT discussed avoidance and minimization issues for the proposed project, potential DFHL transplant locations, and the logistics of obtaining a Plant Conservation Program Permit. The NCDOT noted that Roadway Design and Division 12 engineers were able to modify the planned mechanized clearing method from Method III to Method II throughout the project in order to minimize adverse effects to the DFHL. The NCDOT stated that the BA would address the number of DFHL individuals lost as well as the number avoided through minimization measures. A favored transplant location was determined, and details regarding plant protection were discussed.

BIOLOGICAL OPINION

I. DESCRIPTION OF THE PROPOSED ACTION

As defined in the Service's section 7 regulations (50 CFR 402.02), "action" means "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas." The action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The direct and indirect effects of the actions and activities must be considered in conjunction with the effects of other past and present Federal, state, or private activities, as well as the cumulative effects of reasonably certain future state or private activities within the action area.

This Opinion addresses only those actions for which we believe adverse effects may result. In their BA, the NCDOT outlined those activities involved in the replacement of Bridge No. 139 on County Home Road (SR 1609) over Glade Creek (B-5391) that would affect the DFHL. This Opinion addresses whether replacing the existing bridge is likely to jeopardize the continued existence of the DFHL.

The purpose of this project is to improve safety at the bridge crossing by replacing the deteriorating Bridge No. 139 with a functional, two-lane structure and improving the adjacent roadway geometry by extending the straight approaches to the bridge and increasing the curvature radii of the bends leading to the roadway approaches. As part of the NCDOT's Transportation Improvement Program (TIP), they propose to replace Bridge No. 139 on County Home Road (SR 1609) over Glade Creek in Alexander County (TIP No. B-5391).

The proposed action, as defined in the BA, is to replace Bridge No. 139 in place, with new roadway approaches at each end of the bridge. The length of the proposed roadway work is 251.5 meters [m], centered on the existing bridge. Signage for an off-site detour will be used to direct traffic around the project during construction. The off-site detour will extend west from the intersection of County Home Road and Millersville Road (SR 1610), join NC 16, and connect to the northern portion of County Home Road for a total off-site detour length of 8.05 kilometers between project termini.

The proposed bridge structure consists of concrete, cored slab units with an asphalt overlay. The roadway approaches will include an asphalt concrete surface course within about 56 m of the bridge structure to the south, and within about 49 m of the bridge structure to the north. The remaining roadway will be graded and paved with a gravel surface course. Drainage ditches will be constructed adjacent to both sides of the proposed roadways and on both sides of the bridge. In order to minimize disturbance to Glade Creek, the new bridge will not have piers, headwalls, or footings below the ordinary high-water elevation of the stream.

The NCDOT evaluated two reasonable and feasible alternatives, both of which had direct impacts to the DFHL. Alternative 1 was chosen as the least environmentally damaging and the most practicable alternative; it is referred to as the "preferred alternative" in the BA and is the alternative analyzed in this Opinion. Within the project action area of the preferred alternative, numerous steps were taken to avoid or minimize impacts to the DFHL. In developing and evaluating avoidance and minimization measures, impacts to the DFHL were considered, along with safety concerns and engineering and construction costs.

The preferred alternative for the proposed project will directly impact two plant sites of one occurrence (EO No. 308) of the DFHL. The entire EO No. 308 consists of seven plant sites that contain about 2,456 plants and occupy 2.57 acres of DFHL habitat. Total adverse effects from project construction at the two sites most likely to be affected equate to an estimated loss of 131 individual DFHL plants and 0.129 acre of occupied habitat within the action area.

A. Action Area

The project action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For this project, the limits of potential effects are defined by the NCDOT ROW as well as drainage and construction easements within the construction limits for B-5391. The action area includes the total area encompassed by the project study area as well as the areas adjacent to the study area that include DFHL sites which extend out of the study area. This portion of the action area encompasses about 13.9 acres.

B. Conservation Measures

Conservation measures represent actions, pledged in the project description, that the action agency will implement in order to minimize the effects of the proposed action and further the recovery of the species under review. Such measures should be closely related to the action and should be achievable within the authority of the action agency. The Service considers the beneficial effects of conservation measures in making its determination of whether the project will jeopardize the species and in the analysis of incidental take. However, such measures must minimize impacts to listed species within the action area in order to be factored into the Service's analyses.

The preliminary plans for Alternatives 1 and 2 were compared in order to evaluate adverse effects to the DFHL. Adverse effects resulting from the construction of Alternative 1--the preferred alternative--were anticipated to result in the loss of 156 individual DFHL plants and 0.153 acre of occupied habitat. Adverse effects resulting from the construction of Alternative 2 were anticipated to result in the loss of 370 individual DFHL plants and 0.438 acre of occupied habitat. Selection of Alternative 1 protects 214 individual DFHL plants and 0.285 acre of occupied habitat. While Alternative 2 effectively eliminated the sharp bends leading to the existing bridge structure, preliminary estimates regarding the expenses of ROW acquisition,

construction, and potential adverse effects to the DFHL effectively removed this alternative from further consideration.

Additionally, the NCDOT proposes to offset project-related impacts primarily by three conservation measures, including two measures at the site of the proposed bridge replacement and one measure off-site:

1. Conserving remaining plants in the project action area. This would be achieved through reduction of the acreage of mechanized clearing by incorporating Clearing Method II (clearing of vegetation up to the slope-stake limits) rather than Clearing Method III (clearing of vegetation within 3.05 m of the proposed slope-stake limits). By limiting clearing activities to the slope-stake footprint, Clearing Method II will protect a combined 12 DFHL plants and 0.024 acre of occupied DFHL habitat from adverse effects associated with project construction in Sites 2 and 5. This results in total adverse effects to the DFHL along Alternative 1 of 131 individual DFHL plants and 0.129 acre of occupied habitat.

2. Transplanting and watering the DFHL specimens that would potentially be lost from project construction into another area of the project after construction is completed. In order to ensure the protection of the DFHL in the new sites of EO No. 308 that contain the 24 transplants, the NCDOT will quantitatively and qualitatively monitor the species and its occupied habitat in both the transplant area as well as the sites found in EO No. 308. Monitoring efforts will incorporate a pre-construction environmental baseline monitoring survey as well as a series of post-construction monitoring surveys to take place once every 2 years over a period of 6 years, for a total of three times post-construction. Monitoring will include (a) a direct plant count, (b) completion of a NCNHP Endangered and Rare Plant Survey Form for each site, (c) location information for the transplanted and native occurrences by GPS, (d) a determination of survivorship rates for the transplants, and (e) mapping that depicts the protected transplant area with the other DFHL sites in EO No. 308. Field surveys for all monitoring will occur during the optimal survey window for DFHL in order to help ascertain the overall species composition of the transplants. Reports detailing all monitoring results and any appropriate management activities undertaken to help preserve and protect the transplant area's occupied habitat will be submitted to the Service at the end of each monitoring period.

II. STATUS OF THE SPECIES AND ITS CRITICAL HABITAT

A. Dwarf-flowered heartleaf (*Hexastylis naniflora*)

1. Characteristics

The DFHL was described in 1957 and was placed in the *virginica* subgroup of the *Hexastylis* genus (Blomquist 1957). Leaves are cordate to orbicular-cordate (heart-shaped), supported by long thin petioles that grow from a subsurface rhizome. The leaves are variegated, dark green in color, evergreen, and leathery. The inconspicuous flowers are found near the base of the petioles (Blomquist 1957, Gaddy 1981, Gaddy 1987).

The calyx tube is cylindrical and 4 to 8 millimeters [mm] wide (<1/2 the length of the calyx lobes); calyx lobes are 4 to 7 mm wide (Gaddy 1981, Gaddy 1987). The locules of the ovaries are half-inferior in relation to the base of the floral tube (Glimm-Lacy and Kaufman 1984). Flower color is usually beige to dark brown. Flowering occurs from late March to early June, with fruits maturing from mid-May to early July (Blomquist 1957, Gaddy 1981, Gaddy 1987). The narrow opening (4 to 8 mm) of the calyx is the most definitive characteristic distinguishing the DFHL from other members of the *virginica* subgroup (Gaddy 1981). However, Glimm-Lacy and Kaufman (1984) indicate that the position of the plant's ovaries is also critical in differentiating the species from others within its genus. Finally, the lack of surface features in DFHL pollen is unique among all *Hexastylis* species and therefore is key to differentiating the species with others within the variable-leaf heartleaf (*H. heterophylla*) complex (Murrell et al. 2007).

The DFHL was listed as a federally threatened species by the Service on April 14, 1989. There is no recovery plan for DFHL; the Service developed a draft recovery plan in association with a 1997 status review; however, due to information gathered during the review, including the discovery of new populations and concerns raised about taxonomy, the plan was never finalized (USGAO 2006).

2. Distribution and Habitat Requirements

The DFHL is endemic to the western Piedmont and foothills of North and South Carolina. This herbaceous evergreen is found in moist to rather dry forests along bluffs; boggy areas next to streams and creek heads; and adjacent hillsides, slopes, and ravines. Requiring acidic, sandy loam soils, the species is found in soil series such as Pacolet, Madison, and Musella, among others. Occurrences are generally found on north-facing slopes.

Undisturbed natural communities, such as Piedmont/Coastal Plain Heath Bluff, Dry-Mesic Oak Hickory Forest, and Mesic Mixed Hardwood forests, hold the most viable occurrences. However, less viable remnant occurrences are found in

disturbed habitats, including logged, grazed, mown, and residentially/commercially developed lands; areas converted to pasture, orchards, and tree plantations; roadside rights-of-way; and on upland slopes surrounding manmade ponds or lakes (USFWS 1989, Schafale and Weakley 1990, NCNHP 2001, Padgett 2004). The combined databases of the NCNHP and the SCDNR indicate that the worldwide population of this species consists of 270 EO records representing 151 geographically distinct populations in ten North Carolina counties and three South Carolina counties, with a total of about 285,709 to 289,998 DFHL plants (NCNHP 2017, SCHTP 2017).

3. Life History

Thrips (sucking insects) and flies are the major pollinators of most plant species in the genus *Hexastylis*. The specific pollination method for the DFHL is unknown, but biologists speculate that it may use the same method as related species (Jones et al. 2014). With most *Hexastylis* species, the vectors--flies and thrips--spend most of their lives in the plant's flower tissues and feed on pollen grains or on portions of the plant's outer skin. Once the flowers have been fertilized, ants distribute the seeds (Jones et al. 2014). These ants eat the coating of the seeds and leave the seeds near the plant site or by the ant nest. Seed germination takes place in the spring after the seeds have been exposed to cool temperatures. Germination in the DFHL generally occurs in clusters. Some flowering *Hexastylis* plants do not reach flowering age for 7 to 10 years. The plant's flowering period is mid-March to early June; fruit production begins in mid- to late May; buds come in late July and develop by October. In the buds are next spring's flowers, and next year's leaf will not grow until the plant flowers again.

4. Designated Critical Habitat

In accordance with section 4 of the Act, critical habitat for listed species consists of:

a. The specific areas within the geographical area occupied by the species at the time it is listed in which are found those physical or biological features (constituent elements) that are essential to the conservation of the species and which may require special management considerations or protection.

b. Specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of the Act, upon a determination by the Secretary that such areas are "essential for the conservation of the species."

There is no designated critical habitat for the DFHL; therefore, it will not be addressed further in this Opinion.

III. ENVIRONMENTAL BASELINE

Under section 7(a)(2) of the Act, when considering the effects of an action on federally listed species, we are required to take into consideration the environmental baseline. The environmental baseline includes past and ongoing natural factors and past and present impacts from all Federal, state, or private actions and other activities in the action area (50 CFR 402.02), including Federal actions in the area that have already undergone section 7 consultation and the impacts from state or private actions that are contemporaneous with the consultation in progress. The environmental baseline for this Opinion considers all projects approved prior to the initiation of formal consultation. The environmental baseline for this project includes one documented NCNHP EO, 308, consisting of seven DFHL sites located within the action area for B-5391.

A. Status of the Species Within the Action Area

1. Survey Information for the DFHL

a. 2013

In 2013, during natural resources investigations for B-5391, it was determined that suitable habitat for the DFHL was present within the 12.21-acre study area, generally on north-facing slopes within the mesic mixed hardwood forest areas. Subsequently, plant-by-plant surveys conducted on April 10, 2013, by biologists with Axiom Environmental, Inc. (Sandy Smith, Scott Davis, Kenan Jernigan, and Phillip Perkinson), determined that eight sites (Sites 1-8) of the DFHL occurred within the project area. The boundaries of the sites were flagged and located by a registered surveyor.

b. 2014-2015

Resurveys to confirm site boundaries were completed on August 14, 2014, by biologists with Axiom Environmental, Inc. (Sandy Smith, Scott Davis, Kenan Jernigan, and Phillip Perkinson), using direct plant counts via transects. Seven sites (Sites 1 through 5, 7, and 8) were documented; from surveys in 2013, Sites 5 and 6 were combined into one DFHL site due to the identification of *Hexastylis* spp. individuals between the previously identified boundaries of Sites 5 and 6. The boundaries of the sites were located with a Trimble GeoXH GPS unit, with sub-meter accuracy, and were flagged.

In preparation for 2015 surveys, a visit to the bridge project on March 27, 2015, was conducted to determine if the *Hexastylis* spp. individuals were blooming. Flowers had not yet opened; however, the area owned by Jolly World, LLC (the forested area located south of Glade Creek in the floodplain and on the floodplain slopes), had recently been timbered, impacting Site 5. The area of disturbance was documented. It is estimated that about 1.3 acres of Site 5 were

affected by the timbering activities. Subsequent to the beginning of the blooming period, a survey was conducted on May 5, 2015, on behalf of the NCDOT, by biologists with Axiom Environmental, Inc. (Sandy Smith and Scott Davis), to complete the effort to identify the species of *Hexastylis* spp. found at the DFHL occurrence along the bridge project. Flowers were collected from blooming *Hexastylis* spp. individuals throughout Sites 7 and 8. No individuals of *Hexastylis* spp. were found within the recently disturbed portion of Site 5; however, flowers were collected within the undisturbed western portion of Site 5. In cases where an individual exhibited multiple flowers, a single flower was extracted. Flowers were cataloged and measurements were taken to document the widths, opening diameters, and lengths of the calyx tubes; the widths and lengths of the flower lobes; and the position of the ovaries.

c. 2017

Resurveys were completed on February 27, March 1, and March 7, 2017, by biologists with Axiom Environmental, Inc. (Sandy Smith, Scott Davis, and Allison Keith) and biologist Brian Roberts with McCormick Taylor. Seven sites (Sites 1-5, 7 and 8) were documented. The boundaries of the seven sites were flagged and located with a Trimble GeoXH GPS unit with sub-meter accuracy.

d. Summary of Survey Information

The seven DFHL sites within EO No. 308 are located within both maintained/disturbed forest and Mesic Mixed Hardwood Forest (Piedmont Subtype). Sites 1 through 5 span both of these habitats, while Sites 7 and 8 occur entirely within the Mesic Mixed Hardwood Forest (Piedmont Subtype) community. Due to the disturbance created by logging activities noted prior to surveys in 2015, Site 5 was broken into several smaller sites (5A through 5D), which were fragmented by clearing and logging activities by the landowner. Based on direct plant counts via field transects, the total number of DFHL individuals surveyed increased from 1,366 in 2014 to 2,456 in 2017, and the total area occupied by the sites increased from 2.45 acres in 2014 to 2.57 acres in 2017. The primary reason for the increase in DFHL plants results from a change in the area surveyed. Previous surveys were limited to the boundaries of the study area, but surveys in 2017 were performed such that any site extending outside of the study area was surveyed to the natural terminus of the subpopulation. This resulted in extensions of Sites 5, 7, and 8 by a total of 0.71 acre.

IV. EFFECTS OF THE ACTION

Under section 7(a)(2) of the Act, "effects of the action" refers to the direct and indirect effects of an action on the species or its critical habitat, together with the effects of other activities that are interrelated or interdependent with that action. Under section 7 of the Act, the Federal agency is responsible for analyzing these effects. The effects of the proposed action are added to the environmental baseline to determine the future baseline, which serves as the basis for the determination in this Opinion. Should the effects of the Federal action result in a situation that would jeopardize the continued existence of the species, we may propose reasonable and prudent alternatives that the Federal agency can take to avoid violation of section 7(a)(2) of the Act.

The discussion that follows is our evaluation of the anticipated direct, indirect and cumulative effects of implementing the proposed action. Direct effects are actions that may result in immediate effects to the species, including the construction of temporary causeways, land-clearing, potential toxic spills, and erosion. All of these activities have the potential to kill or injure the species under consideration, by either injuring them, poisoning them, or causing habitat alteration. Indirect effects are those caused by the proposed action that occur later in time but that are still reasonably certain to occur. Cumulative effects are those effects of future state or private activities, not involving Federal activities, which are reasonably certain to occur within the action area of the proposed Federal action (50 CFR 402.02).

A. Analysis of the Species Likely to be Affected

For purposes of this Opinion, adverse effects include direct, indirect, and cumulative effects as well as interrelated and interdependent actions. The proposed replacement of Bridge No. 139 will incur adverse effects to the DFHL most likely through direct effects from construction activities. Seven sites containing the DFHL are located at the bridge replacement project, with two sites (Sites 1 and 2) having the highest potential for impacts. These seven sites constitute EO No. 308 and contain an estimated 2,456 individual DFHL plants. These sites occupy 2.57 acres of DFHL habitat. Total adverse effects from project construction are anticipated to be an estimated loss of 131 individual DFHL plants at two sites and 0.129 acre of occupied habitat.

B. Factors to be Considered

Proximity of the Action – Based on recent surveys within the action area conducted by the NCDOT, the DFHL is within the project impact areas and could be directly and indirectly affected.

Nature of the Effect – Habitat for the DFHL will be affected permanently by the construction associated with the bridge replacement activities. Additionally, both in-stream habitat and habitat within the floodplain of Glade Creek will be affected for

the duration of the construction and bridge replacement activities and likely for some period after completion of the project. Although the clearing of vegetation will be minimal due to reduced mechanized clearing, areas used for equipment access could result in minor changes in vegetative composition.

Disturbance Duration, Frequency, and Intensity – Direct and indirect disturbances to Glade Creek and surrounding vegetation will occur during bridge replacement. Construction activities associated with bridge replacement and road paving will likely result in localized compaction and disturbance of soils. The project is anticipated to be completed within 1 year.

C. Analyses of the Effects of the Action

1. Dwarf-flowered heartleaf (DFHL)

a. Potential Beneficial Effects

The NCDOT and FHWA have agreed to transplant and monitor the DFHL at the project site. Post-project monitoring will provide important information on the survival and growth of transplanted individuals. Monitoring reports detailing all monitoring results and any appropriate management activities undertaken to help preserve and protect the newly occupied habitat will be submitted to the Service at the end of each monitoring period.

b. Direct Effects

In order to calculate direct effects as a result of the proposed bridge replacement project, the assumption was maintained that the DFHL individuals cover occupied habitat homogenously. Direct construction impacts to DFHL are likely to be associated with excavation, fill, and areas of construction equipment access at Sites 1 and 2 and will occur entirely within the slope-stake footprint or construction easements of the proposed project. No direct effects are anticipated to be incurred by mechanized clearing activities since Mechanized Clearing Method II, in which the limits of clearing coincide with the limits of the slope-stakes, will be used during project construction. Direct effects will also be incurred at Site 1, between the slope-stake limits and the construction easement limits, in order to provide construction equipment access to project construction activities beyond the fill slopes. Implementation of this project is expected to equal the loss of 0.129 acre of occupied DFHL habitat containing an estimated 131 DFHL plants found on two of the seven sites situated within EO No. 308.

c. Indirect Effects

Examples of indirect effects for this project include, but are not limited to, drainage impacts occurring over time from construction activities as well as

biological pollution from the encroachment of nonnative, invasive plant species that may be found adjoining or within the DFHL sites. Despite the potential for indirect effects, the project is not expected to incur indirect impacts from either drainage impacts or biological pollution. Although proposed drainage easements are found along the bridge project, none of the easements adjoin or overlap any of the seven DFHL sites. Biological pollution is not anticipated to occur at any of the seven DFHL sites because each site contains few, if any, nonnative, invasive species at or within their respective boundaries. Survey results from 2017 indicate that the degree of threat from nonnative, invasive plant species at each site is currently low to none. The degree of threat from nonnative, invasive plant species for Sites 1 and 2, which are the only DFHL sites bisected by project construction, has been documented as absent through previous NCDOT survey efforts.

d. Interrelated and Interdependent Actions

An interrelated activity is an activity that is part of the proposed action and depends on the proposed action for its justification. An interdependent activity is an activity that has no independent utility apart from the action under consultation. There are no known interrelated or interdependent actions that should be considered in this Opinion.

e. Cumulative effects

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require a separate consultation pursuant to section 7 of the Act.

As the project will not alter the accessibility of the area, the potential for project-related growth is low. The proposed project is a bridge replacement and does not create or improve access to any of the DFHL sites or adjacent parcels. Due to the limited nature of this project, no cumulative effects are anticipated.

f. Conclusion

After reviewing the current status of the DFHL, the environmental baseline for the action area, the effects of the proposed bridge project, the cumulative effects, and the proposed conservation measures, it is our biological opinion that the project as proposed is not likely to jeopardize the continued existence of the DFHL. No critical habitat has been designated for this species; therefore, none will be affected.

It is expected that this bridge project, with the protective measures described previously in this Opinion, can be carried out with the partial loss of only one occurrence (two of seven sites) of the DFHL. The direct loss of 131 plants represents less than an extremely small fraction of 1 percent of the number of known DFHL plants rangewide. This loss will not jeopardize the recovery of the species. The transplanting and monitoring of the DFHL EO No. 308, coupled with the NCDOT's conservation efforts within the project action area for DFHL, will help provide valuable transplant survival information and contribute to the recovery of the species.

V. INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the taking of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, such as breeding, feeding, or sheltering. Harass is defined as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not for the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of the agency action, is not considered to be prohibited under the Act, provided that such taking is in compliance with the terms and conditions of this incidental take statement.

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, section 9(a)(2)(B) provides limited protection to listed plants from take to the extent that the Act prohibits the removal and reduction to possession of federally listed endangered plants or the malicious damage to such plants on areas under Federal jurisdiction or the destruction of endangered plants on non-Federal areas in violation of state law or regulation or in the course of any violation of a state criminal trespass law. Therefore, for this Opinion, incidental take does not apply; and an incidental take statement is not necessary.

VI. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid the adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. We request that the

following conservation recommendations be implemented by the FHWA and NCDOT as part of the project plan:

A. Install brightly colored fencing (construction fence) where DFHL plants occur or are to be relocated. Fencing is recommended as it can easily be seen by equipment operators, as well as ground crews, during clearing activities. The fencing makes an easily visible boundary marker so any construction and clearing crews know the boundaries in order to keep from causing additional/undocumented impacts to DFHL populations.

B. Conduct a preconstruction meeting with project contractors to ensure that site crews understand the reason for the construction fencing and the importance of working within the bounds of the fencing.

The FHWA and NCDOT, through proactive conservation efforts, have recently purchased Parcel No. 62261, located just outside of the R-2707 (US 74, Shelby Bypass) project, which occupies 47.82 acres, and contains a portion of DFHL EO No. 192 (Sites 8A and 8B) in Cleveland County, North Carolina. The NCDOT has committed to the preservation of these two DFHL sites in perpetuity and has submitted a strategic monitoring plan for the sites, which indicate the NCDOT and FHWA's continued support of DFHL conservation and their commitment to recovery of the species.

Two DFHL sites (8A and 8B) are located in the vicinity of existing Site 8 of EO No. 192, in Cleveland County and were last surveyed in December 2015 and October 2016. Monitoring data, site mapping, NCNHP Endangered and Rare Plant Survey Forms, and a North Carolina General Warranty Deed for the two sites were presented to the Service as part of the draft monitoring report for EO No. 192. A final monitoring report for the 2015-2016 survey completed for EO No. 192 will be submitted to the Service upon its completion. Sites 8A and 8B contain a combined 175 individual DFHL plants and 0.36 acre of occupied DFHL habitat.

In order to ensure the protection and status of the DFHL in Sites 8A and 8B of EO No. 192, the NCDOT has agreed to quantitatively and qualitatively monitor the specimens and the occupied habitat of the entire occurrence. Monitoring efforts will follow methods outlined above for EO No. 308 associated with the subject bridge replacement project.

The Service formally acknowledges the NCDOT and FHWA's preservation and monitoring of the sites associated with DFHL EO No. 192 and the protection of 175 individual DFHL plants. Further, the Service commends the NCDOT and FHWA for pursuing this opportunity and recommends these types of actions when feasible. In order for us to be kept informed about actions that minimize or avoid adverse effects or that benefit listed species or their habitats, we request notification of the implementation of any conservation recommendations.

VII. REINITIATION/CLOSING STATEMENT

This concludes formal consultation on the action outlined in your September 5, 2017, request for formal consultation. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over an action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion, (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this Opinion, or (4) a new species is listed or critical habitat is designated that may be affected by the action.

If you or your staff have any questions concerning this Opinion, please contact Mr. Andrew Henderson of our staff at 828/258-3939, Ext. 227, or me, Ext. 223. We have assigned our Log No. 14-357 to this project; please refer to it in any future correspondence concerning this project.

Sincerely,

Janet Mizzi
Field Supervisor

Electronic copy to:
Mr. Tim Bassette, Environmental Program Consultant, North Carolina Department of Transportation, 1548 Mail Service Center, Raleigh, NC 27699-1548
Mr. Colin Mellor, Environmental Coordination and Permitting Group Leader, North Carolina Department of Transportation, 1548 Mail Service Center, Raleigh, NC 27699-1548
Mr. Steve Kichefski, Regulatory Project Manager, U.S. Army Corps of Engineers, 151 Patton Avenue, Suite 208, Asheville, NC 28806
Ms. Trish Beam, Division 12 Environmental Officer, North Carolina Department of Transportation, P.O. Box 47, Shelby, NC 28151

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